

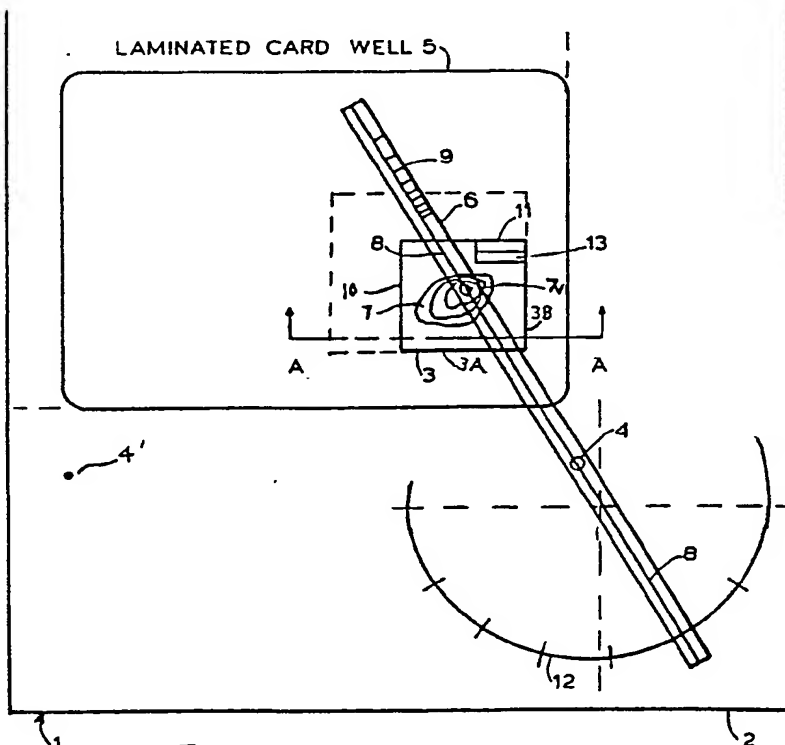


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(21) International Application Number: PCT/US84/01579 (22) International Filing Date: 3 October 1984 (03.10.84) (71)(72) Applicant and Inventor: KUHNS, Roger, J. [US/ US]; Tower Road, Lincoln, MA 01773 (US). (74) Agent: KERSEY, George, E.; P.O. Box 126, Annan- dale, NJ 08801 (US). (81) Designated States: AT (European patent), AU, BE (Eu- ropean patent), BR, CH (European patent), DE (Eu- ropean patent), FI, FR (European patent), GB (Euro- pean patent), JP, KR, LU (European patent), NL (Eu- ropean patent), SE (European patent), SU.		Published <i>With international search report.</i>

(54) Title: CURTAILMENT OF TAMPERING**(57) Abstract**

A portable digitizer for receiving an identification medium (10) having a fingerprint (7) thereon, including at least one fingerprint discontinuity (7v) associated therewith. The exact position of the discontinuity with respect to the edges of the medium is then encoded by the digitizer by rotating an elongated scale (6) coupled to the base of the digitizer until the fiducial line (8) on the scale is coincident with the discontinuity. A reading is thereafter recorded proportional to the position (9) of the discontinuity along the elongated scale and a reading is also recorded indicative of the angle (12) of the elongated scale, with respect to the base member (2). These readings are recorded on the medium and/or inserted into a data processor. The above procedure is repeated during verification of the medium, and if the readings match the medium is deemed authentic.



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CURTAILMENT OF TAMPERINGBackground of the Invention

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This invention relates to security, and, more specifically to the curtailment of tampering of identification cards or the like.

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Photographic identification (photo I.D.) cards are in wide use. Security can be enhanced by employing a fingerprint in conjunction with the photo. In one form of I.D. card, a photograph of the bearer is used with the bearer's thumb print on the reverse. Security is increased by laminating the print-bearing photo between sheets of plastic.

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While it is difficult to delaminate the card, this can be done and a forgery substituted. In this procedure the fingerprint of the original card holder, or some other fingerprint, is placed on the back of the substituted photograph.

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Accordingly, a rapid, efficient and inexpensive method of defeating such forgeries is desirable. The method applies also to cards bearing one or more fingerprints unaccompanied by any photo.

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1 Summary of the Invention.

2 In accordance with the present invention, the exact
3 position of one or more fingerprint discontinuities is deter-
4 mined and recorded for fingerprints employed with identifica-
5 tion media. The determination is made with respect to a
6 prescribed position, such as the edge of an identification
7 medium by a "digitizer" which is inexpensive, portable and
8 reliable.

9 A preferred digitizer employs a pivotable elongated
10 scale which bears a fiducial line. The scale is rotated by
11 an operator until it is coincident with a specified finger-
12 print discontinuity. Data corresponding to the distance
13 from the discontinuity to the pivot point of the scale and/or
14 the angular position of the scale, preferably are thereafter
15 recorded upon the medium with visible or invisible ink.
16 Verification takes place subsequently by inverse operation
17 of the digitizer.

18 Alternatively, or additionally, in those cases where
19 the media is laminated between sheets of plastic, each inner
20 data-bearing sheet, can include a photograph and be treated
21 by forming a plurality of incisions or punctures within the
22 data-bearing sheet. This results in at least partial disin-
23 tegration or disfigurement of portions of the inner sheet
24 upon subsequent attempts at delamination, and indicates
25 tampering. The incisions or punctures also product an addi-
26 tional flow of the laminating adhesive. This increases the
27 adherence of the inner data-bearing sheet to the outer plastic
28 sheets, particularly when the punctures extend all the way
29 through the sheet. Where lamination is by pressure-sensitive
30 adhesives, instead of heat activated adhesives, the adhesive
31 will catch the punctures and result in disfiguration upon
32 attempted delamination. The pattern of punctures may be
33 in the form of a symbol of the issuing authority.

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1 Description of the Drawings

Other objects, features and advantages of the invention will become apparent after consideration of several illustrative embodiments taken in conjunction with the drawings in
5 which:

FIGURE 1 is a plan view of a "digitizer" in accordance with the invention;

FIGURE 2 is a partial sectional view of the digitizer of FIGURE 1;

10 FIGURE 3 is a front view of an ID card which has been modified in accordance with a further aspect of the invention;

FIGURE 4A is a view taken through the card of FIGURE 3 illustrating one effect of the invention;

FIGURE 4B is another view taken through the card of
15 FIGURE 3 illustrating another effect of the invention; and

FIGURE 4C is still another view taken through the card of FIGURE 3 illustrating a further effect of the invention.

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1 FIGURE 5A illustrates an encapsulated recipe card in accordance with a further embodiment of the invention;

 FIGURE 5B illustrates the addition of indicia to the card of FIGURE 5A;

5 FIGURE 5C illustrates the indicia added to the card of FIGURE 5A; and

 FIGURE 6 illustrates an application of the further embodiment of the invention employing technical data.

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1 Detailed Description

In accordance with a preferred embodiment of the invention, a photograph 10 is taken and a right thumb print 7 of the bearer is formed on the back.

5 The print 7 is then placed in a well 3 of a device 1, designated as a "digitizer". The digitizer 1 has a base member 2 which can be a flat plastic sheet. The photo 10 with the fingerprint 7 up is snugly fitted within the edges 3A and 3B of the well 3 so that its exact position is predetermined with
10 respect to pivot 4, which rotatably couples an elongated measuring scale 6 to base member 2.

Although several fingerprint discontinuities are generally present, the center of a closed loop or "vortex" 7v often is the most prominent. Other discontinuities which
15 could be employed are ends of lines (ridges) or line intersections "Y"s).

The encoding or recording of the exact position of the vortex 7v is accomplished by having the operator rotate the elongated scale 6 until the fiducial line 8 on the transparent scale 6 is coincident with vortex 7v. Markings 9 along
20 the length of the scale allow the operator to read the measurement that indicates the distance between the vortex 7v and the pivot member 4. The measurement may be recorded, visibly or invisibly, directly upon the photo 10 in code portion 11
25 and/or in, for example, an electronic data processor, plus on the rear of the inner data-bearing sheet of the card to which the photograph 10 may be affixed.

It is preferred that the scale markings be in accordance with a non-linear scale, for example logarithmic, to
30 further frustrate a forger. An angular reading of the fiducial line 8 is read from the scale and may be recorded, visibly or invisibly, within the code portion 13 of the photo 10 and/or recorded within a data processor and on the inner data-bearing sheet.

35 The photo 10 can itself be employed as an issued



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1 identification medium if typed material is added, or can be
incorporated within a three-part laminated data card. In the
latter case, the photo 10 is desirably fitted into a rectan-
gular cutout within an information-bearing inner sheet identi-
5 cal in relation to the position of the pivot 4 that is there-
after laminated to a pair of outer sheets, typically by heat
and pressure to form a composit I.D. card, as for example,
in U.S. patent 3,679,512 issued to Roger J. Kuhns.

When an operator subsequently desires to verify the
10 authenticity of the identification medium, the digitizer is
again used. In the case of a non-laminated card where the
fingerprint bearing photo 10 is the issued identification
medium, the photo is inserted into the well 3 of, for example,
a second digitizer. The foregoing steps of rotating the
15 elongated sale 6 until the fiducial line 8 coincides with
discontinuity vortex 7 is repeated and the distance and angle
codes are noted by the operator. These data are now compared
with the codes previously recorded on the photo card and/or
inserted into a data processor. If there is a match, the
20 photo card is considered authentic. The inventor has deter-
mined empirically that it is extremely difficult to falsify
fingerprint codes.

In case the encoded photograph 10 is laminated within
outer plastic sheets, verification is performed by inserting
25 the card into the outer well 5 and verification is carried
out as before.

While a rotatable scale 6 is greatly preferred, it
is within the scope of the invention to employ other discon-
tinuity position encoders and readers such as a pointer or
30 other fiducial means coupled to, for example, a rectangular
X,Y encoder reader. A cylindrical lens bearing the fidu-
cial line may be used to advantage as a pointer scale. It
is within the scope of the invention to move the base and
maintain the fiducial line stationary, or to produce rela-
35 tive motion between these two members. The method of the



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1 invention may be practised with a single digitizer or many,
employed at various places, and may be practised without
employing a photo at all.

In the alternative embodiment of FIGURE 3, a photograph
5 34 of a bearer is inserted within a cutout of a data-bearing
sheet 32, or is affixed to the upper surface of the sheet.
The sides of the cutout are at 38 and 39, and the photograph
34 has an emulsion side 36 bearing an optical image and an
opposite side 37 which can bear the fingerprint of the sub-
10 ject. Data sheet 32 is typically of paper or plastic and is
sandwiched between the outer transparent plastic sheets 31-1
and 31-2. The inside surfaces of the outer plastic sheets
31-1 and 31-2 bear a heat-activatable adhesive layer 33-1 and
33-2 which have a thickness of .002 - .006 of an inch. The
15 instant photograph and the data-bearing sheet typically have
a thickness of about .010 of an inch.

In accordance with another aspect of the present inven-
tion, a plurality of punctures 35 are formed within the data-
bearing card. The punctures 35 are also illustrated in FIGURE
20 4A and preferably extend completely through the data-bearing
sheet. The punctures may be formed upon the entire photograph
or alternatively upon a portion of the photograph and through
the inner data-bearing sheet. Such perforations may be formed
by a knurled roller having pointed members, or by a spiked
25 "iron maiden" platen or other similar device. The punctures
may extend completely through the photograph, any protective
inner transparent sheet covering the photo emulsion, and por-
tions of the inner data sheet bordering the photo, so that
upon the lamination of the I.D. card under heat and pressure,
30 adhesive, e.g. polyethylene, will flow into the punctures to
form fine welds between the inner data-bearing sheet and the
outer protective plastic sheets.

Alternatively, corona discharge techniques may be
employed and are believed to be especially effective since
35 this technique forms inverted "mushroom" cavities for good



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1 interlocks between the adhesive and data card. Such punctures
will eliminate the need for a tiecoat, and at the same time
result in the disfigurement or even disintegration of the data-
bearing sheet upon attempted delamination of a composite data
5 card and even make it possible for the outside lamination to
adhere to a smooth plastic sheet immediately covering or
"capping the photo emulsion.

A desirable arrangement is to puncture the inner data-
bearing sheet in areas of the photograph and adjacent areas
10 of the inner sheet 32 bordering the photograph. Upon the sub-
stitution of an unauthorized photograph or data, the border
area of the inner paper data-bearing sheet should be disfigured.
Also the disintegration of the photo upon delamination would
disfigure the fingerprint if present on the back of the photo.
15 Since punctures formed across an entire photograph could some-
times produce loss of image resolution for facial features,
the central photo area need not be punctured. A seal of the
issuing authority could be formed by an array of punctures
at 35a.

20 In FIGURE 4B, incisions 35e are made in the photograph
and within border areas of the inner paper data-bearing sheet.
The incisions are a type of puncturing formed by slicing or
"razor" cutting the inner sheet by well known means in con-
trast with the perforations illustrated in FIGURE 4A, whereby
25 actual portions of the inner sheet are removed.

In the embodiment of FIGURE 4C molten heat-activated
material 33-1 and 33-2 of layer 31-1 and 31-2 are joined
through punctures 36 to produce a unitary molten cohesive
mass for rendering the maximum welding effect mentioned above.

30 It is also within the scope of the invention to produce
punctures which do not extend completely through the inner
data-bearing sheet, and yet will produce disfigurement upon
delamination. Separations between punctures of above 0.3 cm
to about 0.6 cm are preferred. The punctures will also catch
35 pressure-sensitive adhesive if used in place of heat activated



1 adhesive, to disfigure the data sheet. The laminating tem-
perature of the heat-activatable adhesive should be sufficient
to activate the adhesive but not to exceed 100°C. to cause
vaporization of photo moisture if moist photos or data cards
5 are being laminated.

FIGURE 5A illustrates a top view of a recipe card 50,
having indicia 52 thereon, which could, for example, describe
a standard recipe. The card 50 of FIGURE 5A includes an
inner core sheet 53 shown in FIGURE 5B, which is laminated
10 between transparent plastic sheets 54 and 56 by heat and
pressure. A heat activatable adhesive layer 57 is affixed
to the inside portion of outer plastic sheet 54, and a
similar heat activatable adhesive layer 58 is affixed to the
inside surface of the plastic base sheet 56.

15 During the manufacturing process the core sheet 53 is
fed between, for example, rolls of plastic material such as
54 and 56, bearing heat activatable adhesive surfaces 57 and
58. Heat and pressure are applied to produce a laminated
structure as shown in FIGURE 5B.

20 Alternatively, pre-cut plastic envelopes may be
utilized having outer sheets 54 and 56 of "Mylar" polyester
coated with layers 57 and 58 of heat activatable polyethylene
adhesive. In the case of pre-cut envelopes, the outer plastic
sheets enclosing the core sheet 53 are heat sealed together.
25 Such double sheet plastic envelopes are produced by Avant
Incorporated of West Concord, Massachusetts, U.S.A. under
the trademark "Thermochip".



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1 The inner core sheet 53 is commercially available, and
is often designated as carbonless or inkless paper. It has
micro-encapsulated cavities therein containing fluids which
are not visible until pressure is applied to break the
5 capsules causing the fluids to mix and produce visible indicia.
Such sheets have self-contained chemical encapsulations.
The self-contained paper core sheets 53 can extend to the edges
of the plastic outer sheets as indicated in the FIGURES, but
they are also utilized with pre-cut plastic chips or envelopes.

10 The laminated structure of FIGURES 5A and 5B is supplied
to the user and can be completely blank for certain applica-
tions, or can, for example, bear pre-printed indicia such as
the "lasagna recipe" shown in FIGURE 5A as indicia 52.
Customized variations in the recipe are readily produced by
15 adding indicia to the recipe. The additions are produced by
applying pressure with a pointed instrument 64 to the upper
surface of the outer sheet 54 to produce indicia 66 representa-
tive of additional material. The application of pressure
causes the micro-encapsulations in the self-contained chemical
20 paper to be broken, and the additional indicia 66 is thus
produced, which is readily visible through the clear plastic
overlay sheet 54. In accordance with a feature of the inven-
tion, the pre-printed indicia 52 is usually of a color which
provides visual contrast.

25 Grease and other foreign material are no longer a
problem, since the clear plastic may be readily washed and
wiped, and tearing or fraying of the recipes would not occur.
The need to rewrite material, to preserve it after an extended
period of time, is also eliminated. Another advantage is that

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- 1 the cards will readily slide in and out of a file box due to
the reduced coefficient of friction of plastic on plastic
relative to paper on paper.

- Another advantageous feature of the invention is to
5 fabricate the entire structure of FIGURE 5B such that the
card is thin and flexible enough to be inserted within a
typewriter, and thus the added-on material could be type-
written rather than merely handwritten.

- Another exemplary application of the invention is
10 illustrated in FIGURE 6, wherein the inner core sheet 53
bears original indicia 71, representative of an arrangement
of electrical components which could be pre-printed at a
factory. The indicia 71 could represent a basic circuit
which can be modified by the user. In the case of FIGURE 6,
15 the modification is shown to the left of the dashed line 73
and takes the form of the encircled circuit modification 72.

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WHAT IS CLAIMED IS:

1. A method of curtailing forgery of an identification medium having a fingerprint with at least one discontinuity, comprising the steps of:

(a) providing an instrument including a base, fiducial or indicator means movable with respect to said base, and referencing means for positioning said identification medium at a predetermined position upon said base;

(b) positioning said identification medium at said referencing means;

(c) producing relative motion between said fiducial means and said base member until said fiducial means coincides with said fingerprint discontinuity; and

(d) recording data indicative of the resulting relative position of said fiducial means with respect to said base member.

2. The method of claim 1 wherein said identification medium includes a photograph of the bearer and said fingerprint is affixed to said photograph.

3. The method as set forth in claim 1 further including the verification steps of

(e) repositioning said identification medium at said referencing means at a later time;

(f) repeating steps c and d; and

(g) comparing the data resulting from carrying out steps e and f with data previously recorded in accordance with steps a, b, c, and d.

4. The method as set forth in any of claims 1 - 3 wherein the data resulting from carrying out step d is recorded upon said identification medium, adjacent or other identification media, and/or is stored in a data processor.

5. The method of thwarting the forgery of an identification medium having a fingerprint including at least one fingerprint discontinuity recorded thereon, comprising the steps of:



(a) providing at least one digitizer having a base, an elongated scale, having fiducial means pivotably mounted to said base at a predetermined pivot point, an angular scale positioned upon said base adjacent said elongated scale, and position referencing means for positioning said identification medium at a predetermined position upon said base;

(b) positioning said identification medium at said referencing means;

(c) rotating said elongated scale until said fiducial means of said scale coincides with said fingerprint discontinuity;

(d) recording the reading upon said scale aligned with said discontinuity; and

(e) recording the angle upon said angular scale indicative of the angular position of said scale when the measuring portion of said scale is coincident with said discontinuity.

6. The method of claim 5 wherein at least one of said scales includes non-linearly spaced measuring markings; or said identification medium includes a photograph of the bearer and fingerprint is affixed to said photograph; or further including the verification steps of:

(f) repositioning said identification medium at said referencing means at a later time;

(g) repeating steps c, d, and e; and

(h) comparing the data resulting from carrying out step g with previously recorded data recorded in accordance with steps b, c, d, and e;

or the data resulting from carrying out steps d and e is recorded upon said medium and/or elsewhere; or the data resulting from carrying out steps d and e is inserted into a data processor.

7. A digitizer for thwarting the forgery of an identification medium having a fingerprint, including at least one fingerprint discontinuity recorded thereon, comprising



(a) a base member;

(b) fiducial means movable relative to said base member and coupled thereto; and

(c) position referencing means for positioning said identification medium at a precise given position upon said base member; and

said positioning referencing means may comprise a well, formed within said base member, to enable said medium to be positioned therein; and

said fiducial means may comprise

b1. an elongated scale, having fiducial means, pivotably mounted to said base member at a predetermined pivot point; and

b2. an angular scale formed upon said base member for indicating the angular position of said elongated scale; and at least one of said scales may include non-linearly spaced measured markings;

said position referencing means may comprise a well, formed within said base member, to enable said medium to be positioned thereon; and

said elongated scale may comprise a cylindrical lens having a fiducial line positioned thereon.

8. In the method of laminating a composite data card including an information bearing sheet which may include a photograph, and/or fingerprint, said sheet being affixed to at least one protective layer having a heat-activatable adhesive associated therewith by the application of heat and pressure to said information-bearing sheet and said protective layer, the improvement comprising the step of forming an array of punctures within said information-bearing sheet, said punctures acting as receptacles for said molten heat-activatable adhesive during lamination of said composite data card by the application of heat and pressure thereto.



9. The method as set forth in claim 8 wherein said punctures are formed within said photograph; or said punctures are formed within said photograph and/or fingerprint except upon central areas thereof having the image of the face of the subject thereon; or said punctures are additionally formed in areas of said information bearing sheet adjacent the edges of said photograph; or said punctures extend completely through said information-bearing sheet; or said punctures are formed by cutting said information-bearing sheet without removing portions thereof; or said punctures are separated from one another by a distance of about 0.3 - 0.6 cm.

10. In the method of laminating a composite data card including an information-bearing sheet which may include a photograph, and/or fingerprint, said sheet being affixed to at least one protective layer having a adhesive associated therewith, by the application of pressure to said information-bearing sheet and said protective layer, the improvement comprising the step of forming an array of punctures within said information-bearing sheet; and said punctures may be formed within said photograph and/or fingerprint; and said punctures may be formed within said photograph and/or fingerprint except upon central areas thereof having the image of the face and/or fingerprint of the subject thereon; and said punctures may be additionally formed in areas of said information-bearing sheet adjacent the edges of said photograph and/or fingerprint; and said punctures may extend completely through said information-bearing sheet; and



said punctures may be formed by cutting said information-bearing sheet without removing portions thereof; and
said punctures may be separated from each other by a distance of about 0.3 - 0.6 cm; and
said information-bearing sheet may be devoid of photograph and/or fingerprint; and
said array of punctures can be configured in the form of identification indicia.



11. A record card comprising:

a self-contained chemical encapsulated sheet whereby visible indicia is produced thereon upon the application of pressure thereto, said self-contained chemical encapsulated sheet being laminated to at least one light-transmissive overlay sheet.

12. The card of claim 11 wherein said light-transmissive sheet is laminated to one side of self-contained chemical encapsulated sheet and a second sheet is laminated to the other side of said self-contained sheet; and/or

said light-transmissive sheet is clear plastic; and/or
said second sheet is clear plastic; and/or

further including a heat-activatable adhesive formed upon the inner surface of said light-transmissive sheet facing said self-contained chemical encapsulated sheet; and/or

including indicia therein of a color which differs from the color of visible indicia produced by the application of pressure thereto.

13. Method of creating a light-transmissive card bearing indicia added to the card by a user after manufacture of said card comprising the steps of:

providing a card having a self-contained chemical encapsulated sheet whereby visible indicia is produced thereon upon the application of pressure thereto and having a light-transmissive protective sheet overlaying said self-contained chemical encapsulated sheet; and



thereafter applying pressure to said overlay sheet to produce added on visible indicia upon said-self-contained chemical encapsulated sheet visible through said light-transmissive overlay sheet.

14. The method of claim 13 wherein said pressure is applied by a pointed instrument; and/or

said pressure is applied by a pointed instrument;
and/or

said pressure is applied by a typewriter; and/or
said card is thin and flexible enough to be inserted within a typewriter;

said pressure is applied to the outer surface of said protective sheet which is laminated to said self-contained sheet; and/or

said pressure is applied to the outer surface of said protective sheet which is laminated to said self-contained sheet.



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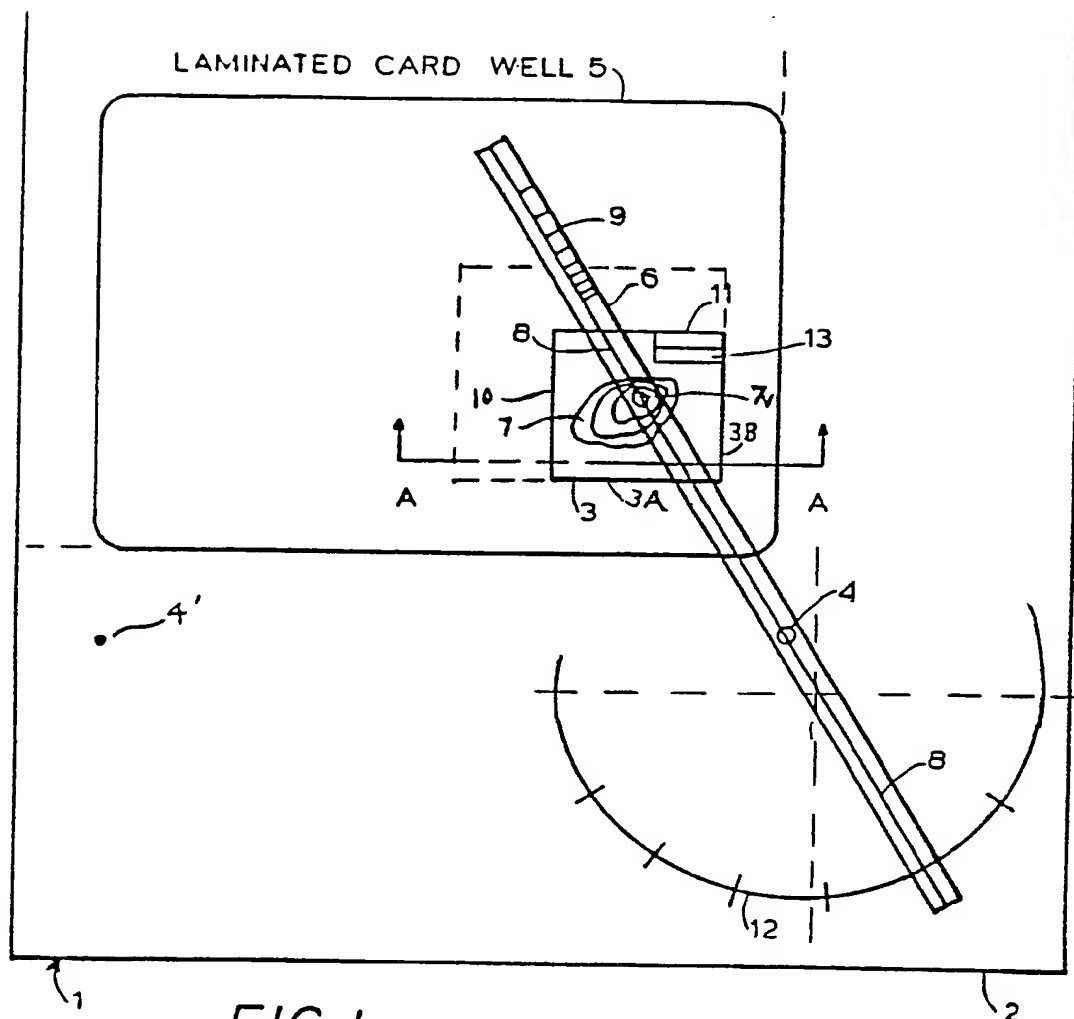


FIG. 1.

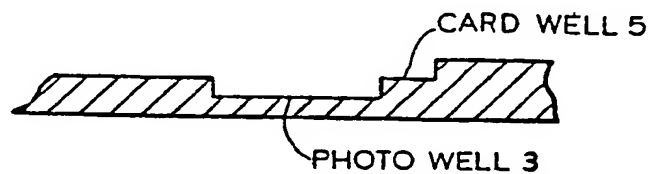


FIG 2

SUBSTITUTE SHEET



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FIG. 3

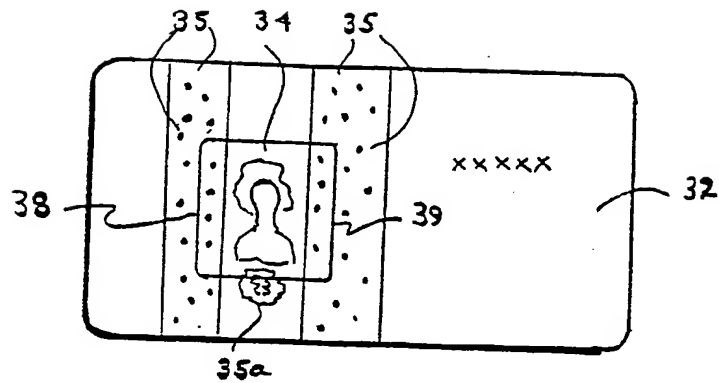


FIG. 4A

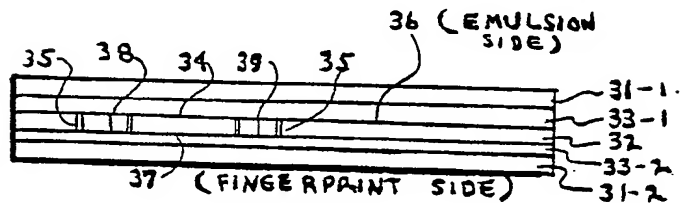


FIG. 4B



FIG. 4C



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FIG. 5A

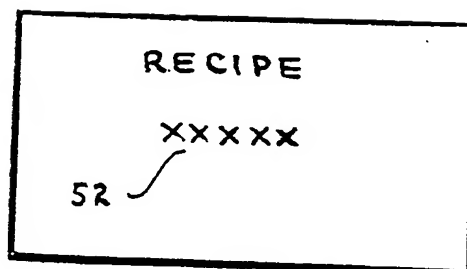


FIG. 5B

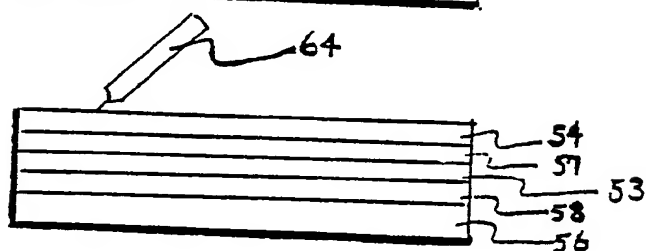


FIG. 5C

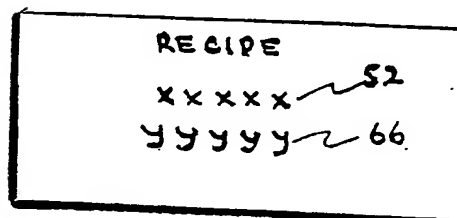
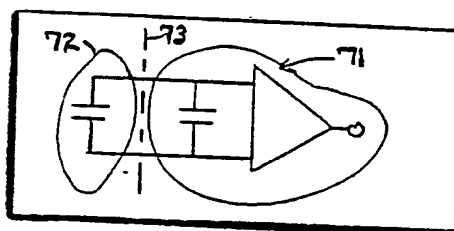


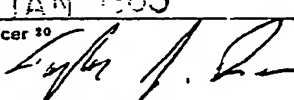
FIG. 6



SUBSTITUTE SHEET

INTERNATIONAL SEARCH REPORT

International Application No PCT/US84/01579

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
INT. CL. ³ B42D 15/00, 15/02; GO1B 3/02, 5/24, 9/00		
U.S. CL. 283/67, 69, 72, 78, 107, 109; 33/1C, 1M, 1BB, 430		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
U.S.	283/67, 68, 69, 70, 75, 78, 107, 109, 112, 904, 33/1C, 1M, 1BB, 1PT, 430	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category [*]	Citation of Document, ¹⁵ with Indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	US, A, 1,380,506 PUBLISHED 07 JUNE 1921, VOGHT.	1-6
A	US, A, 2,007,589 PUBLISHED 09 JULY 1935, WILLIAMS.	1-7
A	US, A, 2,048,879 PUBLISHED 28 JULY 1936, MORAN.	1-7
A	US, A, 2,712,514 PUBLISHED 05 JULY 1955, ENGLISH.	1-6
A	US, A, 3,186,091 PUBLISHED 01 JUNE 1965, PAWLOWSKI.	7
A	US, A, 3,419,287 PUBLISHED 31 DEC. 1968, RUDIE.	1-6
A	US, A, 3,564,266 PUBLISHED 16 FEB. 1971, KLOTZ.	7
A	DE, A, 2,054,764 PUBLISHED 16 JUNE 1971, BOSTROM.	8-10
A	US, A, 3,604,901 PUBLISHED 14 SEPT. 1971, MORITA.	8-10
A	US, A, 3,610,519 PUBLISHED 05 OCT. 1971, RADOSAVLHEVIC.	7
A	US, A, 3,679,512 PUBLISHED 25 JULY 1972, MACONE.	
<p>[*] Special categories of cited documents: ¹⁶</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ¹	Date of Mailing of this International Search Report ²	
02 JANUARY 1985	02 JAN 1985	
International Searching Authority ¹	Signature of Authorized Officer ²⁰	
ISA/US	TAYLOR J. ROSS 	

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

A	US, A, 3,679,512	PUBLISHED 25 JULY 1972, MACONE.	
A	DE, C, 2,205,428	PUBLISHED 03 MAY 1973, SCHAERLI.	8-10
Y	US, A, 3,802,101	PUBLISHED 09 APRIL 1974, SCANTLIN.	8-10
Y	GB, A, 2,040,807	PUBLISHED 03 SEPT. 1980, HARVEY.	11-14
A	US, A, 4,246,307	PUBLISHED 20 JAN. 1981, TRAUTWEIN.	8-10
A	DE, A, 2,940,891	PUBLISHED 16 APRIL 1981, ANMELDER.	8-10

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹⁰

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers _____, because they relate to subject matter ¹² not required to be searched by this Authority, namely:

2. ☐ Claim numbers _____, because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out ¹³, specifically:

VI. ☒ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ¹¹

This International Searching Authority found multiple inventions in this international application as follows:

CLAIMS 1-6 (GROUP I) ARE DRAWN TO A VERIFICATION METHOD.
CLAIM 7 (GROUP II) IS DRAWN TO A DIGITIZER. CLAIMS 8-10
(GROUP III) ARE DRAWN TO A LAMINATING METHOD. CLAIMS 11-14
(GROUP IV) ARE DRAWN TO A RECORD CARD AND A METHOD OF ITS
USE.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

☐ The additional search fees were accompanied by applicant's protest.

☒ No protest accompanied the payment of additional search fees.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No ¹⁸
Y	GB, A, 1,598,702 PUBLISHED 23 SEPT. 1981, FLETCHER.	11-14
Y	US, A, 4,313,984 PUBLISHED 02 FEB. 1982, MORAW.	8-10
Y	GB, A, 2,082,505 PUBLISHED 10 MARCH 1982, BLAKE.	8-10
A	US, A, 4,325,570 PUBLISHED 20 APRIL 1982, ESTRADA, SEE COLUMN 4, LINES 50-58.	1-6
A, P	US, A, 4,426,789 PUBLISHED 24 JAN. 1984, GOODRICH.	7
Y, P	US, A, 4,462,039 PUBLISHED 24 JULY 1984, SMALL.	11-14